

PATTERNING & ALGEBRA: Patterns and Relationships

Grade 2	Grade 3	Grade 4
Overall Expectation		
- identify, describe, extend, and create repeating patterns, growing patterns, and shrinking patterns	- describe, extend, and create a variety of numeric patterns and geometric patterns	- describe, extend, and create a variety of numeric and geometric patterns, make predictions related to the patterns, and investigate repeating patterns involving reflections
Specific Expectations		
– create a repeating pattern by combining two attributes	- identify, extend, and create a repeating pattern involving two attributes, using a variety of tools	
- demonstrate, through investigation, an understanding that a pattern results from repeating an operation or making a repeated change to an attribute	- demonstrate, through investigation, an understanding that a pattern results from repeating an action, repeating an operation, using a transformation, or making some other repeated change to an attribute	
– represent a given growing or shrinking pattern in a variety of ways	- create a number pattern involving addition or subtraction, given a pattern represented on a number line or a pattern rule expressed in words	- create a number pattern involving addition, subtraction, or multiplication, given a pattern rule expressed in words
- identify and describe, through investigation, growing patterns and shrinking patterns generated by the repeated addition or subtraction of 1's, 2's, 5's, 10's, and 25's on a number line and on a hundreds chart	- identify and describe, through investigation, number patterns involving addition, subtraction, and multiplication, represented on a number line, on a calendar, and on a hundreds chart	
– identify, describe, and create, through investigation, growing patterns and shrinking patterns involving addition and subtraction, with and without the use of calculators		
– create growing or shrinking patterns	- extend repeating, growing, and shrinking number patterns	- extend, describe, and create repeating, growing, and shrinking number patterns
– identify repeating, growing, and shrinking patterns found in real-life contexts		- connect each term in a growing or shrinking pattern with its term number, and record the patterns in a table of values that shows the term number and the term
	- represent simple geometric patterns using a number sequence, a number line, or a bar graph	- make predictions related to repeating geometric and numeric patterns
		- extend and create repeating patterns that result from reflections, through investigation using a variety of tools

PATTERNING & ALGEBRA: Expressions and Equality

Grade 2	Grade 3	Grade 4
Overall Expectations		
- demonstrate an understanding of the concept of equality between pairs of expressions, using concrete materials, symbols, and addition and subtraction to 18	- demonstrate an understanding of equality between pairs of expressions, using addition and subtraction of one- and two-digit numbers	- demonstrate an understanding of equality between pairs of expressions, using addition, subtraction, and multiplication
Specific Expectations		
- demonstrate an understanding of the concept of equality by partitioning whole numbers to 18 in a variety of ways, using concrete materials		
– represent, through investigation with concrete materials and pictures, two number expressions that are equal, using the equal sign	- determine, through investigation, the inverse relationship between addition and subtraction	- determine, through investigation, the inverse relationship between multiplication and division
– identify, through investigation, and use the commutative property of addition to facilitate computation with whole numbers	- identify, through investigation, and use the associative property of addition to facilitate computation with whole numbers	- identify, through investigation and use the commutative property of multiplication to facilitate computation with whole numbers
		- identify, through investigation , and use the distributive property of multiplication over addition to facilitate computation with whole numbers
– identify, through investigation, the properties of zero in addition and subtraction (i.e., when you add zero to a number, the number does not change; when you subtract zero from a number, the number does not change)	- identify, through investigation, the properties of zero and one in multiplication (i.e., any number multiplied by zero equals zero; any number multiplied by 1 equals the original number)	
– determine the missing number in equations involving addition and subtraction to 18, using a variety of tools and strategies	- determine, the missing number in equations involving addition and subtraction of one- and two-digit numbers, using a variety of tools and strategies	- determine the missing number in equations involving multiplication of one- and two-digit numbers, using a variety of tools and strategies